WHAT IS CLAIMED IS:

Sub A7

1. A DS-CDMA (Direct Sequence-Code Division Multiple Access) multi-user interference canceller for cancelling interference waves of a plurality of users, comprising a variable gain amplifier for comparing reception characteristics of reception signals received from the plurality of users prior to interference cancellation processing with reception characteristics upon the interference cancellation processing and evaluating a comparison result, and controlling gains prior to baseband decoding of the reception signals so as to maximize improvements of the reception characteristics of the reception signals on the basis of an evaluation result.

2. A canceller according to claim 1, wherein as the reception characteristics to be compared and evaluated, an SN (Signal-to-Noise) ratio or an Eb/No (energy per signal bit/noise power spectrum density) and/or a BER (Bit Error Rate) are used, and the SN ratio or Eb/No is controlled to be maximum, while the bit error rate is controlled to be minimum.

3. A DS-CDMA multi-user interference canceller comprising:

a variable gain amplifier whose gain can be controlled by a control signal;

a preliminary demodulation section for obtaining, in

advance, the reception characteristics of the reception signals received from the plurality of users prior to the interference cancellation processing and notifying respective subsequent interference cancellation stages of the obtained data;

a section for measuring and obtaining the reception characteristics of the reception signals for the respective interference cancellation stages upon the interference cancellation processing;

a section for comparing the reception characteristics of the respective interference cancellation stages upon the interference cancellation processing with the reception characteristics prior to the interference cancellation processing; and

a reception quality collection section for collecting comparison results from all the interference cancellation stages when the interference canceller determines that the degree of improvement of the reception characteristics is low, a control signal is so generated as to correct the current gain to the AGC.

4. A canceller according to claim 3, wherein after said reception quality collection section collects the comparison results in all the interference cancellation stages, a gain of said variable gain amplifier for demodulating the reception signal is so controlled as to

optimize an average result of the comparison results.

5. A CDMA (Code Division Multiple Access) multi-user system for cancelling interference waves of a plurality of users to obtain a plurality of demodulated signals, comprising comparing a variable gain amplifier for comparing reception characteristics of reception signals received from the plurality of users prior to interference cancellation processing with reception characteristics upon the interference cancellation processing and evaluating a comparison result, and controlling gains prior to baseband decoding of the reception signals so as to maximize improvements of the reception characteristics of the reception signals on the basis of an evaluation result.

6. A system according to claim 5, wherein an AGC controller generates a gain control signal for controlling the gain of said variable gain amplifier, an SN (Signal-to-Noise) ratio or an Eb/No (energy per signal bit/noise power spectrum density) and/or a BER (Bit Error Rate) are used as the reception characteristics to be compared and evaluated, and the SN ratio or Eb/No is controlled to be maximum, while the bit error rate is controlled to be minimum.